



FACT SHEET

UNITED STATES AIR FORCE

SPACE BASED INFRARED SYSTEMS (SBIRS)



SBIRS

The Space Based Infrared System (SBIRS) is a transformational program created to meet the warfighter's need for a system that can deliver information quickly and efficiently. Meeting the military's demands for highly accurate information will provide greater flexibility and utility against evolving threats with critical missile defense and warning capability well into the 21st Century.

SBIRS satisfies operational military and technical intelligence Overhead Non-imaging Infrared (ONIR) requirements. The operational SBIRS satellite constellation will consist of four Geosynchronous (GEO) satellites, two Highly Elliptical Orbit (HEO) payloads (P/L) riding on classified host satellites, one spare GEO satellite (procured to protect launch or early on-orbit failure) and both fixed and mobile ground elements. The first SBIRS HEO payload was delivered in August 2004 and the

first GEO satellite is expected to launch in 2008.

SBIRS will provide greater sensor flexibility and sensitivity compared to the Defense Support Program (DSP) satellites. Sensors will cover short-wave infrared like its predecessor, expanded mid-wave infrared and see-to-the-ground bands allowing it to perform a broader set of missions than DSP. DSP satellites have provided integrated tactical warning assessment (ITW/AA) for more than 30 years, with 23rd and final DSP scheduled to launch in 2005.

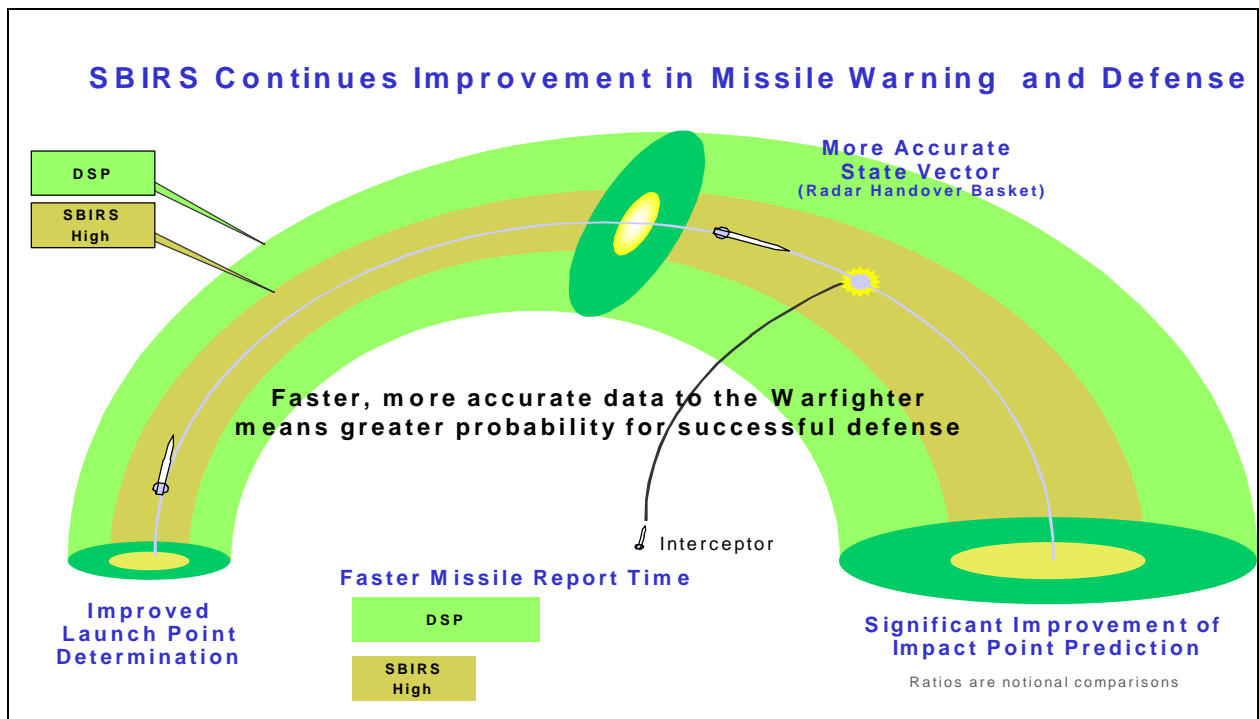
SBIRS Missions and Improved Capabilities

The SBIRS constellation supports user requirements in four distinct mission areas: (1) Missile Warning (MW), (2) Missile Defense (MD), (3) Technical Intelligence (TI) and (4) Battle Space Characterization (BSC).

?? Missile Warning provides early warning of ballistic missile launches against the US, its allies, and other countries, through all phases of attacks. SBIRS will provide earlier warning messages for worldwide strategic missile launches in support of Integrated Tactical Warning/Attack Assessment (ITW/AA), including launches from the polar region, as well as for shorter-range theater missiles. In addition, SBIRS will provide high-confidence detection of new and emerging short-burn theater missiles.

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- ?? Missile Defense provides earliest possible warning of ballistic missile attacks and accurate state vector information to effectively cue other Ballistic Missile Defense System elements to support intercept and negation of the threat. SBIRS will provide earlier warning messages, more accurate launch point estimates to support theater attack operations, smaller burnout state vector errors to allow radar cue for enhanced active defense for both theater operations and GMD operations, and improved impact area predictions ensuring enhanced passive defense operations that will reduce force disruption.
- ?? Technical Intelligence provides infrared data on foreign weapon activity and testing in order to assess weapons deployment, tactics, and technical characteristics, and to conduct conflict and environmental monitoring. SBIRS contributes by providing tracking of additional missiles to burnout, detection of short-burn events, detection of dimmer events, as well as transient events to augment and improve threat assessments and intelligence preparation of the battlefield.
- ?? Battlespace Characterization provides data to support battlefield situational awareness, to include battle damage assessment, suppression of enemy air defense, enemy aircraft surveillance, search and rescue, and location of enemy resources. SBIRS has the capability to detect these same Technical Intelligence events and report them in real time improving situational awareness. Real-time ground processing for the Battlespace Characterization mission is a growth area for SBIRS, as exploitation of the full SBIRS capability represents a future area for capability improvement.



Satellite and Sensor Descriptions

- ?? The DSP sensor is hosted on a spinning spacecraft and samples each point on the earth within its field of view with a fixed revisit time. Data is processed on-board the

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spacecraft to remove background and noise; exceedances are downlinked to the ground for mission processing.

- ?? SBIRS GEO spacecraft will be a stabilized platform with a scanning sensor and a staring sensor. Sensor pointing will be accomplished with pointing mirrors in front of the telescopes.
- ?? The GEO scanning sensor will provide a shorter revisit time than that of DSP over its full field of view, while the staring sensor will be used for step-stare or dedicated stare operations over smaller areas.
- ?? The GEO staring sensor will have high agility to rapidly stare at one earth location and then step to other locations, with improved sensitivity compared to DSP. Several areas can be monitored by the staring sensor with revisit times significantly smaller than that of DSP. A continuous staring mode will also provide an even smaller revisit time.
- ?? SBIRS HEO sensor is a scanning sensor similar to the GEO scanner, with sensor pointing performed by slewing the full telescope on a gimbal.
- ?? SBIRS GEO and HEO sensor raw unprocessed data will be downlinked to the ground so that the same radiometric scene observed in space will be available on the ground.

SBIRS Ground Description



SBIRS Mission Control Station

The SBIRS Ground Segment will be developed and fielded in blocks of capabilities, and will consist of three major components: two fixed operational sites, relay ground stations that send data back to the fixed sites, and nine mobile ground elements.

The SBIRS ground segment will provide capabilities to support transition, launch, and mission operations for both the GEO satellites and HEO sensors, as well as supporting on-orbit operations for the residual DSP satellites. Relay Ground Stations, located around the world, receive data from the satellites and forward it to the Mission Control Station

at Buckley Air Force Base, Colo. for further processing. In addition, multi-mission mobile processors (M3Ps), deployed worldwide in survivable and endurable configurations receive data directly from SBIRS satellites to generate and disseminate launch reports using tactical theater communications. MCS software generates launch reports that include missile type; launch point, time and azimuth; and predicted impact point. Data used from multiple satellites is fused to improve reports.

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